



## College of Charleston

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May 26, 2004

Dr. Edward J. Weiler, Associate Administrator  
Office of Space Science  
National Aeronautics and Space Administration  
300 E Street SW  
Washington, DC 20546

Dear Dr. Weiler:

I am writing to bring you up-to-date on the work of the Planetary Protection Advisory Committee, and to sketch out the anticipated work of the Committee over the next year—subject, of course, to emerging requirements of the Office of Space Science.

At our most recent meeting in January, the Committee reviewed the significant events relating to planetary protection over the prior six months—some of them unprecedented. For the first time since the Viking missions of the mid-1970s, the US launched two identical spacecraft to Mars. Concurrently, two other space agencies attempted to reach the planet with three other spacecraft (with two of those failing in the endeavor). In September, the Galileo spacecraft reached an end-of-mission that was dictated by planetary protection concerns about the potential contamination of Europa. This act completed a planetary protection plan that was agreed to between the project office and NASA Headquarters in 1988, and represented the first time a mission has been purposefully crashed into a planet to protect another solar system body—an act that received widespread positive coverage in the press. The Committee also was briefed on NASA's efforts to develop a Jupiter Icy Moons Orbiter to continue the work that Galileo had begun—as well as the steps being anticipated to continue the protection of those icy moons from biological contamination. Clearly, with these current and prospective missions as well as the Stardust encounter, the operation of Genesis and Cassini, and other missions in preparation, this has been an active time for solar system exploration and thus an active period for planetary protection.

For the future, the Committee is working to provide cogent advice to NASA on the implementation of its planetary protection policy, and to address the underpinnings of that policy, as well. The implementation of any planetary protection policy will be more challenging if the pace of Mars exploration and discovery continues at the present rate. With the Odyssey results showing the way, and with the recent discoveries by Opportunity on *Meridiani Planum*, Mars is showing itself as a planet that surely will require appropriate caution in “following the water.” With the announcement of the Presidential vision for the future of NASA, there may be pressure on the Office of Space Science to accelerate some aspects of Mars exploration to enable a future human presence on Mars. That step will require careful consideration of the biological status of Mars including assessing the impact of a human mission on future life detection experiments, and a thorough assessment of the technology available to continue its exploration. The Committee will be working to ensure that issues that span multiple NASA Offices are well understood among the involved parties, and that we are meeting your needs in this regard.

At future meetings, the Committee will continue to discuss the issues that were evident at our January meeting (agenda attached). The most prominent of these will be requirements implementation for Mars—particularly for the Mars Science Laboratory (MSL) mission. I anticipate that these will largely occupy us for at least the next two sessions, although these areas will continue to require Committee attention, at some level, as long as NASA maintains a solar system exploration program. But that is to be expected—the planetary protection policy, by its very nature, highlights concerns and mandates a cautious approach to the study of other solar system bodies—particularly those that may harbor livable environments.

We anticipate that the Committee will consider the following issues over the next two meetings:

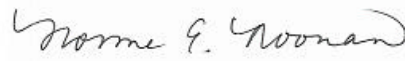
- Mars Forward Contamination
  - Phoenix implementation
  - MSL requirements (special issues with RTGs and ice) and implementation
  - Mars sample return forward requirements
- Mars Backward Contamination
  - Atmospheric sample return (cf., SCIM) requirements/implementation
  - Surface/subsurface sample return requirements/implementation
- Icy Moons Forward Contamination
  - Planning for Europa, Ganymede, Callisto and JIMO
  - Other bodies (e.g., Ceres)
- Basic Policy and Its Implementation
  - Establishment and use of molecular biological methods as standards for spacecraft preparation
  - Engineering application of cleaning and sterilization methods on modern spacecraft
  - Approach to human exploration and lessons to be learned in preparation
  - Philosophical/ethical considerations in planetary protection and its implementation including incorporation of these elements in formal risk analysis.
  - Enhancement of public awareness and communication with the public regarding planetary protection

Finally, I would like to mention some significant areas in which the NASA's planetary protection program has shown recent, visible gains. One such area, which represents a milestone in an ongoing process, is the re-establishment of a unified planetary protection policy at the international level, through COSPAR. The issuance of a newly revised COSPAR planetary protection policy, as a single document, in 2002 represented the first time since 1963 that the policy has been available in a complete form, and its use as an international standard has positive implications for current and future international solar system exploration missions. The Committee recognizes that maintaining an active, open dialog with the international scientific and technical community (including mission planners) will continue to be a vital part of any effective planetary protection program.

Additionally, the Committee is very supportive of the Planetary Protection Officer's efforts to focus education activities on planetary protection practitioners, that is, mission personnel involved in planning and executing missions and building spacecraft. This is particularly important in the development of a cadre of personnel who will be aware of planetary protection and its importance, and will also be capable of aiding the implementation of NASA's policy through their influence on future mission activities.

We look forward to our future meetings and to advising NASA on future planetary protection activities.

Sincerely,

A handwritten signature in black ink, reading "Norine E. Noonan". The signature is written in a cursive style with a large initial "N".

Norine E. Noonan, Ph.D.  
Dean, School of Sciences and Mathematics